

Two new species of the genus *Stenochironomus* from Japan (Diptera: Chironomidae)*

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The genus *Stenochironomus* KIEFFER belongs to the tribe Chironomini of the subfamily Chironominae. At present this cosmopolitan genus is known to contain 34 species, i.e., 5 Palearctic, 11 Nearctic, 11 Afrotropical, 2 Oriental, 1 Micronesian, 2 Australian and 2 Neotropical species. In Japan, TOKUNAGA and KURODA (1935, 1936) recognized 3 species, *Chironomus nelumbus*, *satorui* and *bitensis*, all of which were included in the subgenus *Stenochironomus* according to the EDWARDS' system.

The subgenus *Stenochironomus* was raised to the rank of genus again by GOETGHEBUER (1937) in "Die Fliegen der palaearktischen Region." Therefore, Japanese three species were combined with the genus *Stenochironomus* according to the GOETGHEBUER's system by SASA and YAMAMOTO (1979). According to GOETGHEBUER (1937), however, *Stenochironomus bitensis* KIEFFER is nothing but a variety of *Stenochironomus gibbus* Fabricius (1794), so I do not use this older name of *bitensis* in this paper.

In the course of my recent study on Japanese fauna of the Chironomidae I was able to find two additional species which are described as new to science in this paper.

The genus *Stenochironomus* KIEFFER is distinguished from its allied genera by the following combination of characters: ocellus entirely absent; antennal flagellum composed of 13 flagellomeres in male, 5 in female; maxillary palpus well developed, composed of 5 segments but 1st segment indistinct; antepnotum much reduced, far surpassed by the strongly projecting anterior part of meso-scutum; acrostichal setae long, biserial; wing membrane without macrotrichia; squama fringed; foretibia with a comparatively elongated apical scale which bears a distinct or indistinct spur on tip, variable within species; a pair of combs of middle and hind tibiae fused, and with 2 short spines; pulvilli being conspicuous lobe; male genitalia with small dorsal appendage and much elongated slender ventral appendage which bears some long setae on its apical 1/4-1/2; female genitalia with gonocoxapodeme VIII straight, gonapophysis VIII with ventro-

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lateral lobe vestigial and its posterior margin furnished with fine teeth of comb, which is more or less sclerotized, dorsomesal lobe of gonapophysis well developed.

Before going further I wish to express my hearty thanks to Prof. Y. HIRASHIMA and Assoc. Prof. K. MORIMOTO of Entomological Laboratory, Kyushu University, for their kind guidances. I am also much indebted to Prof. T. SAIGUSA, Biological Laboratory, College of General Education, Kyushu University, for his kind guidance in preparing this paper and giving me invaluable specimens. My thanks are also due to Dr. M. HAYASHI of Saitama University, and the following entomologists of Kyushu University, Messrs. K. ÔHARA, T. GOTÔ and N. KÔDA for offering invaluable specimens.

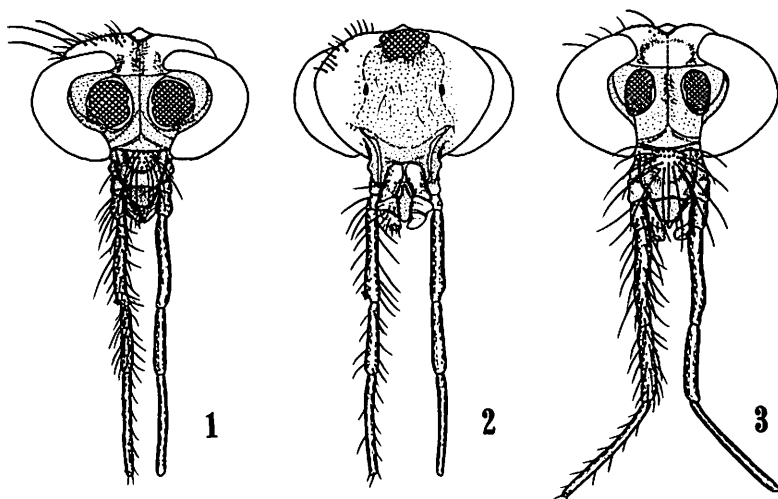
Stenochironomus nubilipennis YAMAMOTO, sp. nov.

♂. Colouration: Head pale yellow; antennal pedicel pale orange yellow, flagellum brown; clypeus pale yellow; maxillary and labial palpi dark brown. Thorax with antepnotum, postpronotum and scutellum yellowish white; mesonotum pale orange yellow, very thinly white pollinose; scutum whitish at anterolateral corner, lateral vittae slightly darkened; postnotum dark brown with pale orange yellow anteromedian part and yellowish white median line. Thoracic pleura pale orange yellow, thinly white pollinose. Coxae yellowish white to pale orange yellow, very thinly white pollinose; middle and hind coxae tinged with dark brown at apical part. All trochanters and femora dark brown, very thinly white pollinose. Tibiae dark brown but middle tibia pale orange yellow to yellowish white on apical 1/2. Tarsi yellowish white, but 1st tarsomere of foreleg dark brown on basal 1/2-2/3. Wing extensively infuscated to pale brown except for a large pale area occupying basal 1/2 of wing behind M and a small narrow pale streak along apical 1/2 of R_1 . Veins dark brown but yellowish white on pale areas. Halter yellowish white. Abdomen pale yellow from base to 4th segment or basal 2/3 of 5th, apical portion including genitalia dark brown.

Head (Figs. 1-2): Antennal ratio, range 1.04-1.63, mean 1.44. First to 5th palpal segment lengths (μ): 40-65, mean 58; 50-90, mean 72; 195-300, mean 262; 135-205, mean 178; 190-370, mean 303; the palpal segments with 1, 8-13, 26-48, 8-32, 8-15 setae respectively. Vertex and clypeus with 13-37, 13-22 setae respectively. Prementum with 1-3 (mostly 1) setae.

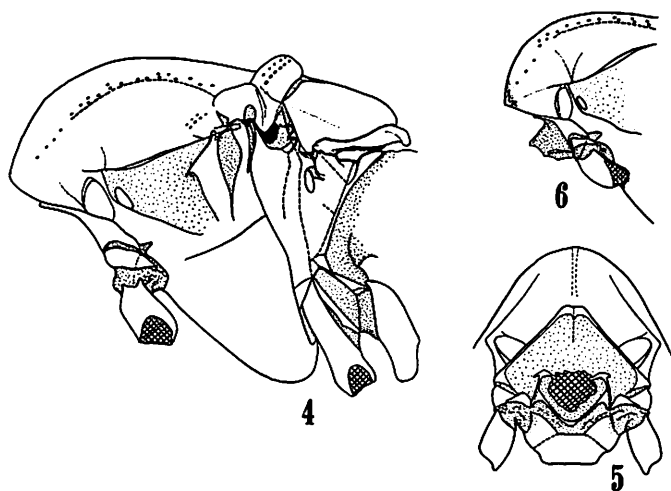
Thorax (Figs. 4-5): Antepnotum without setae; dorsocentrals 12-26, acrostichals 17-34 and scutellars 11-25, all biserial; prealars 4-10, partially biserial; no supra-alar.

Legs: Fore-, middle and hind coxae with 4-7, 7-15, 4-8 apical setae respectively. Middle coxa with 5 minute sensory hairs on middle portion of outer surface. Fore-, middle and hind trochanters with 11-15, 8-14, 9-14 apical setae respectively.



Figs. 1-3. *Stenochironomus nubilipennis* sp. nov.

1: ♂ head, frontal aspect. 2: ♂ head caudal aspect. 3: ♀ head, frontal aspect.

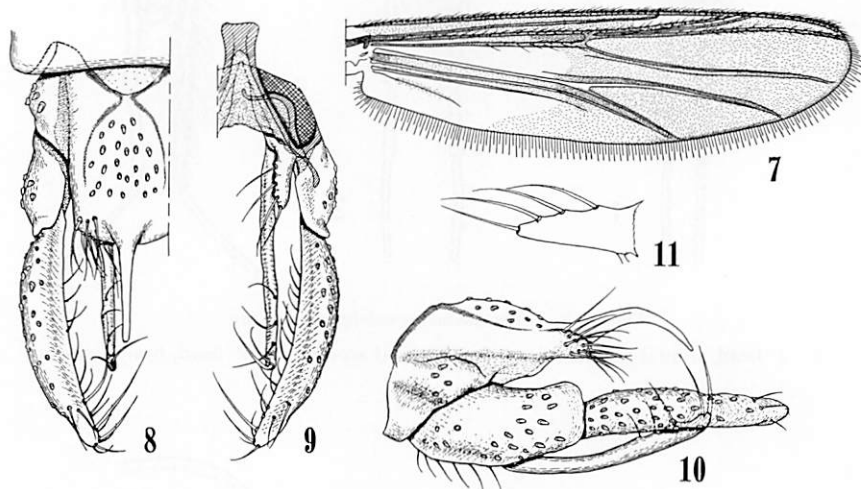


Figs. 4-6. *Stenochironomus nubilipennis* sp. nov.

4: ♂ thorax, lateral aspect. 5: ♂ thorax, frontal aspect. 6: ♀ thorax, anterior part of mesoscutum, lateral aspect.

Lengths (means, 0.01 mm in unit) and proportions (ranges and means) of legs:

| | F | T | Ta ₁ | Ta ₂ | Ta ₃ | Ta ₄ | Ta ₅ | BV | SV | LR |
|----|-----|-----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| P1 | 122 | 106 | 129 | 76 | 60 | 46 | 20 | 1.73-1.90, 1.79 | 1.70-1.87, 1.79 | 1.13-1.26, 1.20 |
| P2 | 117 | 95 | 69 | 39 | 32 | 21 | 12 | 2.66-3.11, 2.73 | 2.88-3.14, 3.06 | 0.70-0.77, 0.73 |
| P3 | 141 | 121 | 91 | 56 | 45 | 28 | 13 | 2.45-2.55, 2.49 | 2.72-3.00, 2.87 | 0.72-0.80, 0.75 |



Figs. 7-11. *Stenochironomus nubilipennis* sp. nov. ♂.

7: wing. 8: genitalia, dorsal aspect. 9: genitalia, tergal and sternal elements removed, dorsal aspect. 10: genitalia, lateral aspect. 11: dorsal appendage, dorsolateral aspect.

Wing (Fig. 7): Length 1.9-2.6 mm, width 0.5-0.7 mm. L/WR, range 3.63-4.00, mean 3.78. VR, range 0.94-1.00, mean 0.97. R_{2+3} parallel with R_1 , and ending at basal 1/8 between apices of R_1 and R_{4+5} . R , R_1 , R_{4+5} and about apical 1/2 of M to r-m cross-vein with 27-55, 16-47, 21-75, 0-14 setae respectively. Radialis with 8-12 annular organs on its basal part, 2-4 annular organs on middle anteriorly, 8-11 annular organs on apical part, and with 2 setae near middle. Squama with 4-6 setae.

Genitalia (Figs. 8-11): Epandrium oblong, very weakly rounded posteriorly, and with 17-19 long setae on its median field. Anal point long and slender, tapering to rather pointed tip in dorsal aspect, arched dorsally at basal 1/2 in lateral aspect. Gonostylus long and slender, smoothly curved on its outer margin, tapering and clothed with some long setae near apex. Dorsal appendage small, tapering towards apex and its ventral margin nearly straight in dorsolateral aspect, and its dorsal margin bearing 3-5 long setae. Ventral appendage long and slender, slightly curved dorsally in lateral aspect, reaching the level of apical

1/3 of gonostylus, and clothed with 3–5 setae on its apical 1/2, but the seate of extreme tip not shortened.

Length of body: 3.0–4.5 mm.

♀. Colouration almost as in male, but lateral vitta of scutum tinged with brown in some individuals. Antennal flagellum and scape yellowish white, slightly tinged with brown; last flagellomere darkened. Cercus yellow.

Head (Fig. 3): Antennal flagellomere lengths (μ): 140–225, mean 179; 110–145, mean 130; 110–140, mean 124; 100–150, mean 119; 120–165, mean 144. First to 5th flagellomeres with 12–16, 7–8, 6–8, 6–8, 2–3 setae respectively. First to 5th palpal segment lengths (μ): 55–85, mean 65; 80–105, mean 87; 240–345, mean 285; 175–255, mean 215; 345–525, mean 416; the palpal segments with 1, 8–13, 31–55, 13–47, 12–21 setae respectively. Vertex and clypeus with 20–35, 18–29 setae respectively. Prementum with 2 setae.

Thorax (Fig. 6): Dorsocentrals 23–44, acrostichals 25–45, prealars 6–16 and scutellars 16–26, all biserial.

Legs: Fore-, middle and hind coxae with 6–8, 6–21, 5–9 apical seate respectively. Middle coxa with 5 minute sensory hairs on middle portion of outer surface. Fore-, middle and hind trochanters with 11–16, 10–16, 11–16 setae respectively.

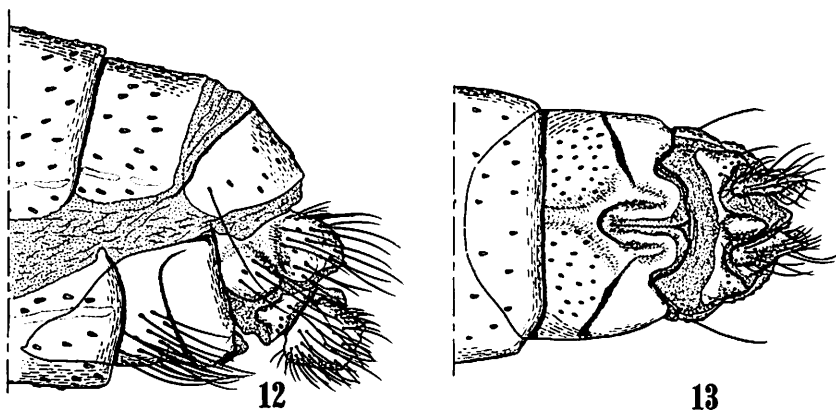
Lengths (means, 0.01 mm in unit) and proportions (ranges and means) of legs:

| | F | T | Ta ₁ | Ta ₂ | Ta ₃ | Ta ₄ | Ta ₅ | BV | SV | LR |
|----|-----|-----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| P1 | 143 | 124 | 147 | 86 | 66 | 51 | 23 | 1.75–1.97, 1.83 | 1.69–2.04, 1.82 | 1.06–1.28, 1.18 |
| P2 | 138 | 113 | 76 | 42 | 30 | 21 | 13 | 2.88–3.33, 3.08 | 3.03–3.67, 3.28 | 0.62–0.74, 0.68 |
| P3 | 164 | 140 | 102 | 61 | 48 | 30 | 15 | 2.50–2.76, 2.64 | 2.83–3.18, 2.89 | 0.68–0.76, 0.73 |

Wing: Length 2.4–2.9 mm, width 0.7–0.9 mm. L/WR, range 2.92–3.61, mean 3.36. VR, range 0.93–0.98, mean 0.95. R, R₁, R₄₊₅ and about apical 1/2 of M to r-m cross-vein with 39–79, 41–79, 89–158, 14–31 setae respectively. Radialis with 10–12 annular organs on its basal part, 3 annular organs on middle anteriorly, 9–11 annular organs on apical part, and with 2–3 setae near middle. Squama with 8–17 setae.

Genitalia (Figs. 12–13): Gonocoxapodeme VIII straight. Dorsomesal lobe of gonapophysis VIII large and well developed. Ventrolateral lobe of gonapophysis VIII vestigial and its posterior margin furnished with strongly sclerotized fine teeth of comb. Gonocoxite IX with 5–10 setae, segment X with 2–8 setae. Postgenital plate well developed and projecting, ovoid. Cercus rectangular.

Length of body: 2.3–3.0 mm.



Figs. 12-13. *Stenochironomus nubilipennis* sp. nov. ♀.
12: genitalia, lateral aspect. 13: same, ventral aspect.

Distribution: Japan (Honshu, Kyushu)

Holotype: ♂ (Type No. 2327, Kyushu Univ.), Mt. Hikosan, Fukuoka Pref., Kyushu, 31. v. 1974 (M. YAMAMOTO).

Paratypes: [Honshu] 2♂♂, 1♀, Oirase (600 m), Kamikita, Aomori Pref., 1. viii. 1979, Light Trap (K. ÔHARA); 2♂♂, Kuroyu, Senboku, Akita Pref., 9. vii. 1962 (T. SAIGUSA); 1♂, 1♀, Futatsuya, Hida-Kawai, Gifu Pref., 11. vi. 1977 (K. ÔHARA); 2♀♀, same locality and same date (M. YAMAMOTO); 12♂♂, 8♀♀, Danto-Uradani (900 m), Kitashidara, Aichi Pref., 15. vi. 1977 (K. ÔHARA); 12♂♂, 7♀♀, same locality and same date (M. YAMAMOTO). [Kyushu] 76♂♂, 1♀, Mt. Hikosan, Fukuoka Pref., 31. v. 1974 (M. YAMAMOTO); 1♂, same locality and same collector, 12. vi. 1975; 3♂♂, same locality and collector, 13. vi. 1975; 2♂♂, Mt. Sefri, Fukuoka Pref., 15. vi. 1978 (N. KÔDA); 2♂♂, same locality, 4. vii. 1977 (M. HAYASHI and N. KÔDA); 124♂♂, Chôjabaru, Mts. Kujû, Oita Pref., 18. vi. 1976 (T. GÔRÔ); 1♂, 2♀♀, same locality and same collector, 28. vi. 1977; Naidaijinkyô, Kumamoto Pref., 2. vii. 1976, Light Trap (M. YAMAMOTO); 1♂, 1♀, Mt. Hakuchôzan (1300 m), Izumimura, Kumamoto Pref., 19. vii. 1977 (K. ÔHARA); 1♂, 2♀♀, same locality and same collector, 9. vii. 1978; 2♂♂, 1♀, same locality and same date (T. GÔRÔ).

The holotype is deposited in the collection of the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka.

Five paratypes (KMNH IR 200001-KMNH IR 200005), which were collected from the same locality of the holotype, are preserved in the collection of the Kitakyushu Museum of Natural History (KMNH).

Remarks: This new species is distinguishable from any other species of the genus *Stenochironomus* in having the wing uniformly clouded on apical half. In

general structure of the male genitalia including epandrium and ventral appendage the new species is similar to *S. satorui* and *S. gibbus* (= *bitensis* KIEFFER, *sensu* TOKUNAGA).

***Stenochironomus membranifer* YAMAMOTO, sp. nov.**

♂. Colouration: Head pale yellowish brown; antennal pedicel pale yellowish brown, very thinly grey pollinose; flagellum brown except 1st flagellomere whitish; clypeus, maxillary and labial palpi pale yellowish brown. Thorax with anteprenotum, postpronotum and scutellum yellowish white; mesonotum predominantly subshining brownish black; scutum yellowish white on anteromedian to anterolateral margins before parapsidal suture, and on prealar and supra-alar calli; prescutellar area widely yellowish white with brownish tinge; postnotum brownish black. Thoracic pleura pale brownish yellow, very thinly white pollinose; anepisternum II, epimeron II and anepisternum III slightly tinged with brown. All coxae and trochanters yellowish white; foreleg predominantly dark brown but basal 1/2 of femur yellowish white; middle and hind legs entirely yellowish brown. Wing hyaline, slightly tinged with grey, veins pale yellowish white. Halter yellowish white, slightly infuscated on apical 1/2. Abdomen olivaceous but 6th tergite black except the yellowish white caudal margin, genitalia pale brown.

Head: Antennal ratio, range 2.02–2.09. First to 5th palpal segment lengths (μ); 60–65, 90–100, 220–240, 155, 270–275; the palpal segments with 1, 9–11, 27–32, 23–26, 10–14 setae respectively. Vertex and clypeus with 16–21, 27–29 setae respectively. Prementum with 1 seta.

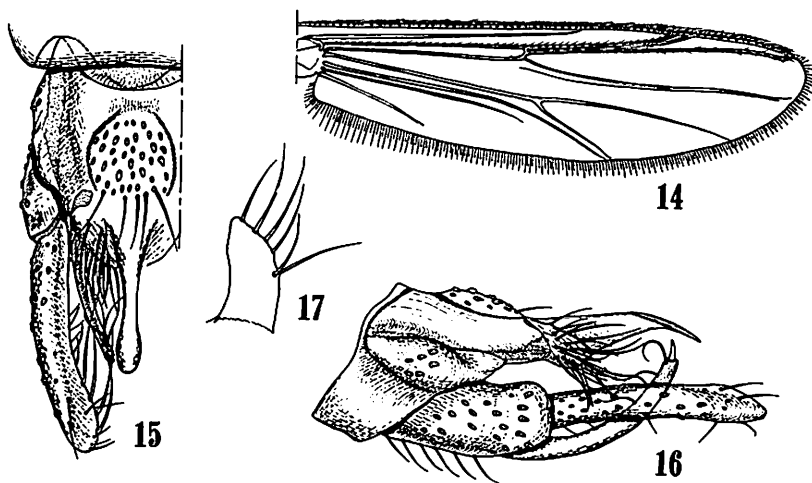
Thorax: Anteprenotum without setae; dorsocentrals 11–12 and prealars 6–7, both uniserial; acrostichals 25–27 and scutellars 20–22, both biserial; no supra-alar.

Legs: Fore-, middle and hind coxae with 8–9, 13–14, 6 apical setae respectively. Middle coxa with 5 minute sensory hairs on middle portion of outer surface. Fore-, middle and hind trochanters with 14, 10, 11 apical setae respectively.

Lengths (means, 0.01 mm in unit) and proportions (ranges) of legs:

| | F | Ti | Ta ₁ | Ta ₂ | Ta ₃ | Ta ₄ | Ta ₅ | BV | SV | LR |
|----|-----|-----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------|-----------|-----------|
| P1 | 125 | 115 | 134 | 81 | 68 | 55 | 25 | 1.62–1.65 | 1.78–1.81 | 1.15–1.17 |
| P2 | 113 | 99 | 70 | 38 | 29 | 20 | 10 | 2.80–2.83 | 3.00–3.04 | 0.70–0.72 |
| P3 | 126 | 118 | 94 | 53 | 45 | 28 | 13 | 2.42–2.49 | 2.59–2.61 | 0.79–0.80 |

Wing (Fig. 14): Length 2.0 mm, width 2.2–2.7 mm. L/WR 3.59. VR



Figs. 14-17. *Stenochironomus membranifer* sp. nov. ♂.

14: wing. 15: genitalia, dorsal aspect. 16: genitalia, lateral aspect. 17: dorsal appendage, dorsolateral aspect.

0.89-0.94. R_{2+3} parallel with R_1 , and ending at basal $1/8$ between apices of R_1 and R_{4+5} . R , R_1 , R_{4+5} and about apical $1/4$ of M to $r-m$ cross-vein with 34-39, 32-35, 54-70, 2-3 setae respectively. Radialis with 11-12 annular organs on its basal part, 3 annular organs on middle anteriorly, 11-12 annular organs on apical part, and with 3 setae near middle. Squama with 9-11 setae.

Genitalia (Figs. 15-17): Epandrium oval and with 25-45 long setae on its median field, a pair of small desclerotized areas appearing on apical $1/3$ of epandrium, which continues to the weakly delimited desclerotized areas between epandrium and hypandrium. Anal point long, comparatively stout, strongly constricted in the middle, widening distad and rounded at tip in dorsal aspect, with dorsal margin almost straight and weakly curved ventrally in the middle from side. Hypandrium rather wider than that of *nubilipennis*, with 4-6 long setae dorsolaterally. Gonostylus long and slender, very slightly curved inwardly, nearly parallelsided, slightly widening distad, and clothed with some long setae near apex. Dorsal appendage small, gradually tapering towards apex and its ventral margin slightly curved ventrally and apical $1/2$ of its dorsal margin arched ventrally in dorsolateral aspect and bears 6 setae. Ventral appendage long and slender, strongly curved dorsally in lateral aspect, reaching apical $1/3$ of gonostylus, clothed with 4-5 setae on apical $1/4$, and bearing a short and stout spine at the extreme tip.

Length of body: 3.0-4.0 mm.

♀. Colouration almost as in male. Antenna brownish yellow but last flagellomere darkened. Cercus yellowish white.

Head: Antennal flagellomere lengths (μ): 165, 120–125, 115–135, 115–125, 160–195. First to 5th flagellomeres with 13–14, 8–9, 8–9, 8, 2–3 setae respectively. First to 5th palpal segment lengths (μ): 65–70, 100–110, 240–260, 195, 355–370, and the palpal segments with 1, 10–11, 32–34, 25–26, 11–14 setae respectively. Prementum with 2 setae. Vertex and clypeus with 18–21, 23–28 setae respectively.

Thorax: Antepronotum without setae; dorsocentrals 18–21 and prealars 6–7, both uniserial; acrostichals 23–31 and scutellars 19–21, both biserial; no supra-alar.

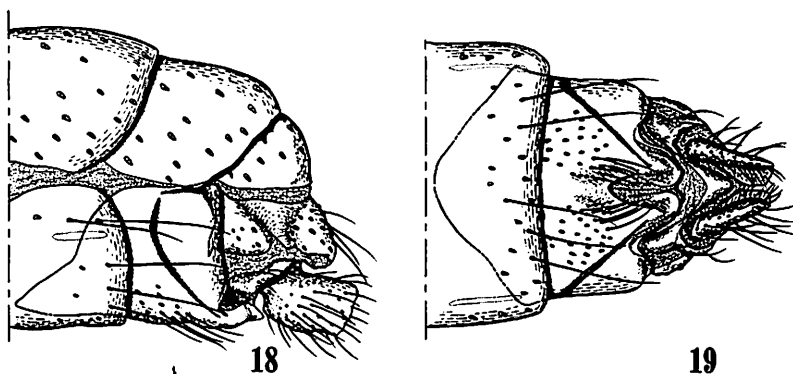
Legs: Fore-, middle and hind coxae with 7–9, 14–17, 8 apical setae respectively. Middle coxa with 5 minute sensory hairs on middle portion of outer surface. Fore-, middle and hind trochanters with 15–16, 12, 12 apical setae respectively.

Lengths (means, 0.01 mm in unit) and proportions (ranges) of legs:

| | Fe | Ti | Ta ₁ | Ta ₂ | Ta ₃ | Ta ₄ | Ta ₅ | BV | SV | LR |
|----|-----|-----|-----------------|-----------------|-----------------|-----------------|-----------------|------------|------------|-----------|
| P1 | 170 | 148 | 190 | 110 | 90 | 75 | 33 | 1.65 (n=1) | 1.67 (n=1) | 1.29–1.30 |
| P2 | 134 | 120 | 84 | 45 | 36 | 23 | 13 | 2.89–2.92 | 3.00–3.06 | 2.60–2.67 |
| P3 | 146 | 140 | 109 | 60 | 54 | 31 | 12 | 2.44–2.50 | 2.60–2.67 | 0.76–0.79 |

Wing: Length 2.2–2.5 mm, width 0.7 mm. L/WR 3.11–3.38. VR 0.90–0.91. R, R₁, R₄₊₅ and about apical 1/2 of M to r-m cross-vein with 49–59, 52–56, 109–113, 14–15 setae respectively. Radialis with 11–12 annular organs on its basal part, 3 annular organs on middle anteriorly, 10–12 annular organs on apical part, and with 2–3 setae near middle. Squama with 10–16 setae.

Genitalia (Figs. 18–19): Gonocoxoapodeme VIII straight. Dorsomesal



Figs. 18–19. *Stenochironomus membranifer* sp. nov. ♀.

18: genitalia, lateral aspect. 19: genitalia, ventral aspect.

lobe of gonapophysis VIII large and well developed. Ventrolateral lobe of gonapophysis VIII vestigial and its posterior margin furnished with weakly sclerotized fine teeth of comb. Gonocoxite IX with 7-8, segment X with 3 setae. Postgenital plate well developed, flattened and triangular.

Length of body: 3.0-3.5 mm.

Distribution: Japan (Honshu, Kyushu)

Holotype: ♂ (Type No. 2328, Kyushu Univ.), Shimobaru, Fukuoka Pref., Kyushu, 7. vii. 1974 (M. YAMAMOTO)

Paratypes: [Honshu] 1♂, Midorogaike, Kyoto Pref., 23. vi. 1977 (K. ÔHARA); 1♂, Hirakawa, Yamaguchi Pref., 28. v. 1975 (M. YAMAMOTO). [Kyushu] 2♀♀, Shimobaru, Fukuoka Pref., 12. vii. 1974 (M. YAMAMOTO); 1♂, 2♀♀, same locality, 7. viii. 1974 (M. YAMAMOTO).

The holotype is deposited in the collection of the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka.

One paratype (KMNH IR 200006), which was collected from the same locality of the holotype, is preserved in the collection of the Kitakyushu Museum of Natural History (KMNH).

Remarks: This new species is undoubtedly allied to the European species *S. hibernicus* (EDWARDS, 1929), from which, however, it is distinguished by a pair of small desclerotized areas on the epandrium as mentioned above. With respect to the male genitalia, the oval epandrium and a short spine on the extreme tip of the ventral appendage are also founded in *S. nelumbus*. This species is distinct from the preceding *S. nubilipennis* YAMAMOTO by the body colouration, colourless wing and structure of the male genitalia. The female of the new species may also be distinguished from that of *nubilipennis* by weakly sclerotized teeth of comb on the vestigial ventrolateral lobe of gonopophysis VIII.

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